

# Difference Between Vein and Venule

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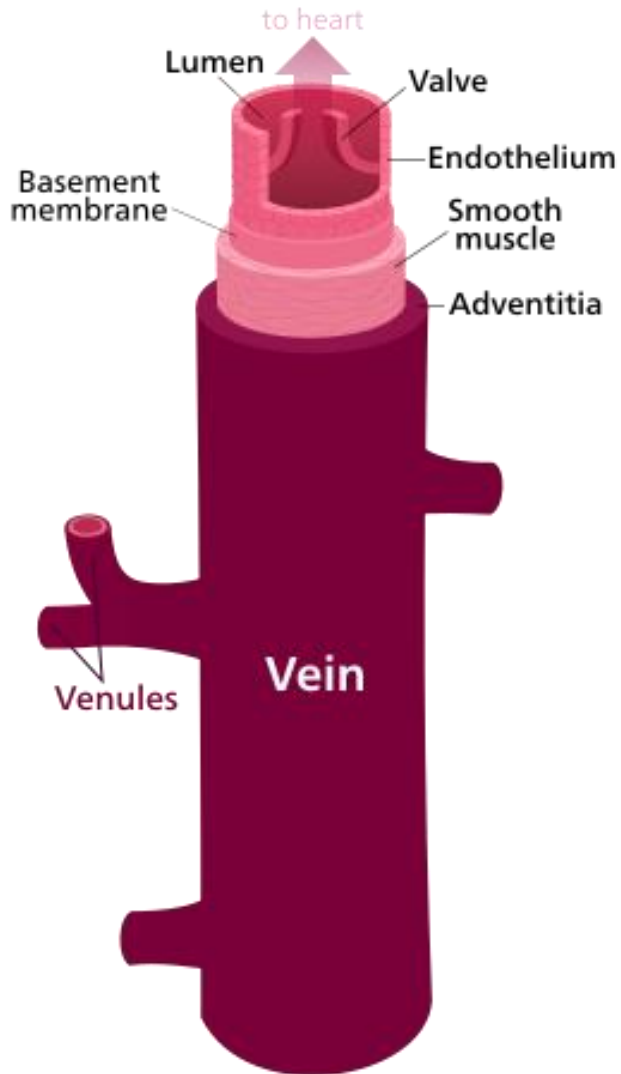
## Key Difference - Vein vs Venule

The veins are the [blood](#) vessels that carry blood towards the [heart](#). It always has a low [blood pressure](#). Except the [pulmonary](#) and the umbilical veins, all the remaining veins carry the deoxygenated blood. On the contrary, the [arteries](#) carry blood away from the heart. The veins have valves in them to prevent the back flow of blood and to maintain unidirectional blood flow. They are less muscular, larger and are located closer to the skin. Venules are very smaller veins. They are the ones that collect blood from the [capillaries](#). The collected blood will be directed to the larger and medium veins where the blood is transported towards the heart again. Many venules unite to form larger veins. **The key difference between Vein and Venule is, the vein is a larger blood vessel that carries blood towards the heart while, the venule is a smaller minute blood vessel that drains blood from capillaries to the veins.**

## What is a Vein?

The veins are larger blood vessels present in throughout the body. The main function of veins is to carry oxygen-poor blood back into the heart. Veins are classified into some categories such as, superficial veins, pulmonary veins, deep veins, perforator veins, communicating veins and systematic veins. The wall of the vein is thinner and less elastic than the wall of an artery. The walls of the veins consist three layers of tissues which are named as tunica externa, tunica media, and tunica intima. Veins also have larger and irregular lumen.

Veins are low blood pressure vessels. The veins possess a number of valves to prevent the back flow of blood to the capillaries. These valves maintain the unidirectional blood flow towards the heart. Veins are [translucent](#) in nature. The subcutaneous fat absorbs low-frequency light allowing only the highly energetic blue wavelength to penetrate through dark veins. Hence, they are blue in color due to the subcutaneous fat that they possess.



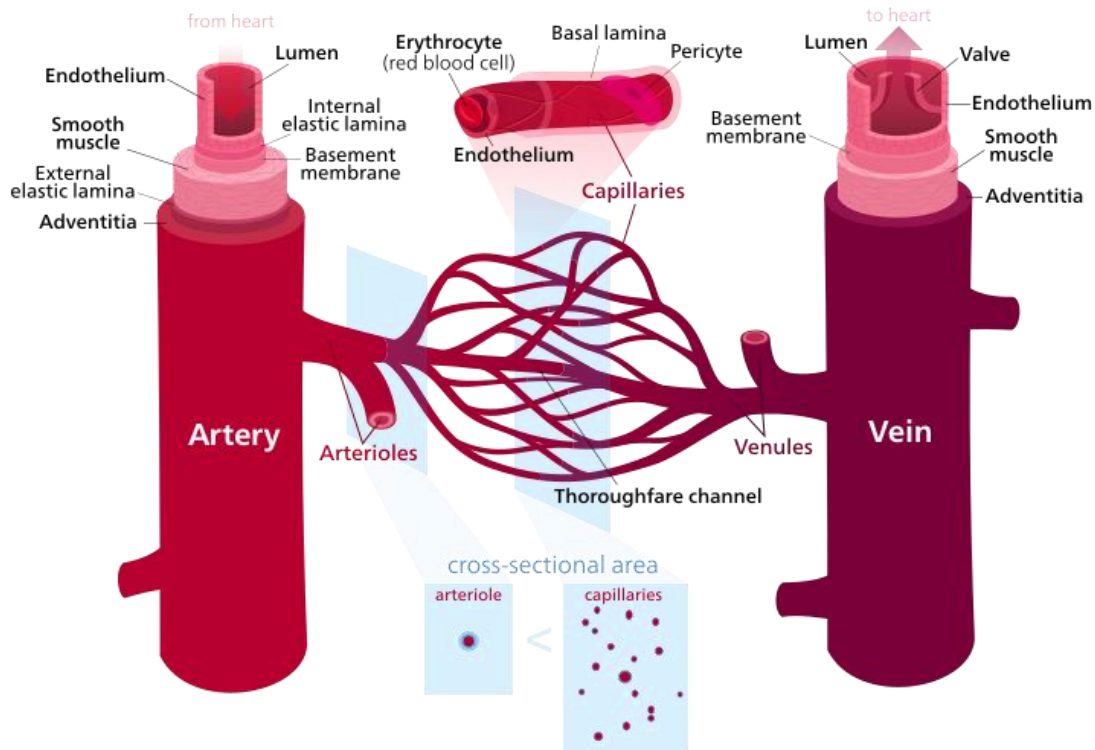
**Figure 01: Vein**

When a vein is drained off from blood and is removed from a particular organism, it appears grey-white in color. Diseases like venous insufficiency, [deep vein thrombosis](#), and portal hypertension are associated with defected veins. [Ultrasound](#) and duplex ultrasound techniques can be used to observe the veins. Veins contain most of the blood around 60 % of the total blood content of the body.

## What is a Venule?

The venules are very small blood vessels that are involved in the micro blood circulation in the body. They drain blood from the capillaries to the larger blood vessels like veins. Venules are 7  $\mu\text{m}$  to 1 mm in diameter. Venules contain 25 % of the blood from the total blood content of the body. Usually, venules unite to form veins. The postcapillary venules normally join the capillaries exiting from a capillary bed. The walls of the

venules contain an [endothelium](#) (squamous endothelial cells), thin middle layer with muscle cells and elastic fibers and an outer layer of connective tissue fibers.



**Figure 02: Venules**

Venules and capillaries are the primary sites of the diapedesis. They are extremely porous which allow the blood to move easily. High endothelial venules have an endothelium made up of simple cuboidal cells.

## What are the Similarities Between Vein and Venule?

- Both are part of the venous system of the body.
- Both blood vessels types contain low blood pressure.
- Both transport deoxygenated blood.
- Both contain thinner walls.

## What is the Difference Between Vein and Venule?

Vein vs Venule	
Vein is a larger blood vessel that carries blood towards the heart.	Venule is a smaller minute blood vessel that drains blood from capillaries to the larger veins.

Size	
Vein is larger in size, and the diameter is measured by millimeters.	Venule is very smaller in size and the diameter is measured by micrometers.
Function	
Vein is transporting blood towards the heart.	Venule is draining blood from the capillaries to the larger veins.
Tunica Externa in the Wall	
Vein has a broad tunica externa on the wall.	Venule has a very thin tunica externa on the wall.
Tunica Media in the Wall	
Vein has a broad tunica media on the wall.	Venule has a very thin tunica media on the wall.

## Summary - Vein vs Venule

Veins and venules are the parts of the venous system of the body which help in transporting blood back to the heart. Veins are the blood vessels that transport blood towards the heart. They transport deoxygenated blood, except in pulmonary and umbilical veins. Veins contain valves that allows the blood flow towards the heart, and they open only when they are squeezed. On the other hand, venules drain blood from capillaries to larger veins. Venules are smaller size vessels. Many venules unite to form the larger and medium size veins. Both veins and venules have thinner walls compared to the arteries. This is the difference between vein and venule.

### Reference:

1. "Blood Vessels." Vascular System. [Available here](#)
2. Boundless. "The Venous System." The Venous System | Boundless Anatomy and Physiology. [Available here](#)
3. "Vein." Wikipedia, Wikimedia Foundation, 17 Dec. 2017. [Available here](#)

### Image Courtesy:

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